

Interuniversity Attraction Poles program
IAP P6/23: 2007 - 2011
"Advanced Research on Exotic Nuclei
for Nuclear Physics and Nuclear Astrophysics"

- History of the IAP network
- Composition of the new network
- Scientific aim and goals of the new network
- Comments from the referees
- General discussion

➤ History of the IAP Network

Phase I (1987-1991)	<ul style="list-style-type: none">• The production and acceleration of radioactive ion beams and their use in nuclear physics, nuclear astrophysics and solid state studies• The study of the excitation and ionization of multiply charged ions by electrons and photons
Phase II (add. phase I)	<ul style="list-style-type: none">• Radioactive ion beams <p><u>U.C.L.</u>, U.L.B., K.U.Leuven</p>

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Phase III (1992-1996)	<ul style="list-style-type: none">• Radioactive ion beams <p><u>U.C.L.</u>, U.L.B., K.U.Leuven</p>
Phase IV (1997-2001)	<ul style="list-style-type: none">• Production and use of radioactive nuclear beams in nuclear astrophysics and nuclear physics <p><u>U.C.L.</u>, U.L.B., K.U.Leuven</p>

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Phase IV (1997-2001)	<ul style="list-style-type: none"> • Production and use of radioactive nuclear beams in astrophysics and nuclear physics 	U.C.L., U.L.B., K.U.L.
Phase V (2002-2006)	<ul style="list-style-type: none"> • Exotic nuclei in nuclear physics and nuclear astrophysics 	U.C.L., U.L.B., K.U.Leuven, U GSI, GANIL
Phase VI (2007-2011)	<ul style="list-style-type: none"> • Advanced research on exotic nuclei for nuclear physics and astrophysics 	U.L.B., K.U.Leuven, U.Gent, SCK• GSI, GANIL, CSNSM, U-Köln

Zentrum voor Ionische Atomen

Zentrum voor Ionische Atomen

➤ Partners of the IAP P6/23 Network

- ✓ *Instituut voor Kern- en Stralingsfysica (K.U.Leuven)*
 - ✓ *Physique Nucléaire Théorique et Physique Mathématique (U.L.B.)*
 - ✓ *Vakgroep Subatomaire en Stralingsfysica (U.Gent)*
 - ✓ *Studiecentrum voor Kernenergie (SCK•CEN Mol)*
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- ✓ *GANIL - Caen, France*
 - ✓ *GSI - Darmstadt, Germany*
 - ✓ *Universität zu Köln, Germany*
 - ✓ *Centre de Spectrométrie Nucléaire et de Spectométrie de Masse, CSNSM, Orsay, France*

Associated partners:

- ✓ *Centre de Recherches du Cyclotron (U.C.L.)*
- ✓ *ISOLDE - CERN, Geneva, Switzerland*

➤ Goals and Workpackages of the IAP P6/23 Network

Goal 1:	• Increase the selectivity of the LISOL laser ion source and optimise the experimental conditions of Penningtrap based projects (WITCH, SHIPTRAP).
Goal 2:	K.U.Leuven, GSI
Goal 3:	
Goal 4:	
Goal 5:	
Goal 6:	
Goal 7:	

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Goal 2:	• Model and analyse a selected set of nuclear reactions of astrophysics interest including an experimental study of neutron-capture reactions.
Goal 3:	U.L.B., U.Gent
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Goal 3:	• Investigate the properties of key states in light exotic nuclei, compare them with the theoretical models developed within the collaboration, and understand the possible influence on the reaction mechanism at energies around the Coulomb barrier.
Goal 4:	U.L.B., K.U.Leuven, GSI, GANIL
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Goal 5:	U.L.B., K.U.Leuven, U.Gent, GSI, GANIL, CSNSM, U-Köln
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Goal 5:	• Study the nuclei along the $N=Z$ line elucidating the neutron-proton pairing interaction, verifying isospin symmetry and studying the weak interaction in the atomic nucleus.
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Goal 6:	• Study neutron-induced reactions on rare isotopes of interest for astrophysical and nuclear waste transmutation processes.
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Goal 7:	• Investigate the feasibility of using the high power proton beam that will become available in the MYRRHA accelerator driven system for Belgian fundamental nuclear-physics research.

U.L.B., K.U.Leuven, U.Gent, SCK•CEN, U-Köln

• Referees comments on the proposal

- This request for funding is a unique opportunity for the Belgian groups to continue to assume a **major role** in radioactive beam physics for nuclear structure and astrophysics on a European and, indeed, world-wide scale.
- Within the network, the **experimental** effort benefits from the strongest **theoretical** backing possible.
- This funding request will also provide **students** with the opportunity to get training at forefront facilities under exceptionally favorably circumstances. It will also expose them to ideas and concepts at the forefront of the field.

• Discussion

- Remarks on the scientific program
- How to increase exchange amongst researchers from the different partners
(IAP day, two days workshop (cfr. Ittre), common seminars, web page applications)
- Aim/use of the webpage (proposal, news, talks, preprints, publications)
- Visibility at the Belgian scene (Belgian Physical Society meeting, Groupe de contact FNRS)
- Visibility at the international forum (network name Be!XOTIC, logo: can be used for talks, seminars,...)

- Network name and logo competition

The Be!EXOTIC collaboration

(Belgian collaboration for studies of EXOTIC nuclei)

The BeSTAR or B* collaboration

(Belgian collaboration for nuclear **S**tructure and **A**strophysical **R**eactions)

The B! collaboration

(Belgian collaboration for nuclear structure and related areas)

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The B! collaboration

ceci n'est pas un logo

The Atomium collaboration

ceci n'est pas un logo

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